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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/070,501	03/07/2002	Vladimir Kliatzkin	468/1	7024

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EXAMINER	
ALEJANDRO, RAYMOND	
ART UNIT	**PAPER NUMBER**
1745	

DATE MAILED: 07/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/070,501	KLIATZKIN, VLADIMIR	
	Examiner	Art Unit	
	Raymond Alejandro	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 June 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *28-33 and 35-46* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *28-33 and 35-46* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *25 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 06/07/06 has been entered.

This action is being offered in reply to the amendment filed in connection with the foregoing RCE. The applicant has overcome most of the objections and the 35 USC 102 rejection. Refer to the foregoing amendment for more information concerning applicant's rebuttal arguments and remarks. However, the present claims are rejected over a new ground of rejection as presented hereinbelow. Thus, the present application is being non-finally rejected for the reasons of record:

Claim Objections

1. Claim 28 is objected to because of the following informalities: a non-capital letter (lower case) should be used in the term "Said", for instance, "said" in lines 9 and 19 (two occurrences) . Appropriate correction is required.

Specification

2. The amendment filed 06/07/06 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall

introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: (claim 28) "*non-glued and non-sintered compressed particles*". Applicant has not pointed out where the new or amended claim is supported, nor does there appear to be a written description of the claim limitation "*non-glued and non-sintered compressed particles*" in the application as filed. That is to say, the newly claimed subject matter is not adequately described in the original disclosure. A careful review of applicant's specification fails to reveal specific support for the foregoing limitation as a whole. For example, a) on page 3 at lines 9-11 the specification recites "*intergranular contact*" and at lines 14-16, "*in a matrix of granular or powder particles of an active material*"; b) on page 4 at lines 4-8, the specification discloses "*a means for applying pressure to the external surface of the assembled cell, ensuring close contact between granular or powder particles and between the particles and the electrode*" and at lines 23-24 the specification discloses "*the powder or grains of the active material*"; c) on page 5, lines 9-14, the specification establishes that "*The configuration may be one in which each carbon fiber constitutes an electrode*"; d) page 9, lines 8-10 discloses "*Electrode housing 6 has a flat piece of conductive fabric 1 inserted into electrical insulation bag 5 filled with a zinc, lead, or silver oxide slurry 2 on both sides*", and at lines 19-23 the specification discloses "*to prevent agglomeration of the slurry powder into a single piece*"; e) page 10, lines 4-9 mentions that "*the electrode pair or set of electrode pairs may be held under pressure by spring elements 8*"; f) at page 12, lines 5-9, the specification recites "*a slurry electrode accumulator*". (***Emphasis provided→***) Additionally, original claim 25 specifically recited "*said electrode executed by sintering, pressing or other method*". Nowhere the specification as filed mentions, discloses, or suggests the limitation "*non-glued and non-*

sintered compressed particles" as now presented by applicant. In other words, the specification as filed neither supports the limitation "*non-glued*", nor "*non-sintered*" nor "*compressed*". In contrast, the specification as filed in original claim 25 provides guidance to support "*a sintered electrode material*" which is just opposite to "*non-sintered*"; and only "*a pressed electrode material*" but not a "*compressed electrode material*" as applicant vehemently argues. The difference between "compress" and "press" (as defined in Merriam-Webster's Collegiate Dictionary 10th Edition) is that the former may encompass "*reduction in size or volume as if by squeezing*" while the latter simply requires "*to act upon through steady pushing or thrusting force exerted in contact*" (simply to apply a force without necessarily forming a compact/compressed body).

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 28-46 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The added material which is not supported by the original disclosure is as follows: (claim 28) "*non-glued and non-sintered compressed particles*". Applicant has not pointed out where the new or amended claim is supported, nor does there appear to be a written description

of the claim limitation "*non-glued and non-sintered compressed particles*" in the application as filed. That is to say, the newly claimed subject matter is not adequately described in the original disclosure. A careful review of applicant's specification fails to reveal specific support for the foregoing limitation as a whole. For example, a) on page 3 at lines 9-11 the specification recites "*intergranular contact*" and at lines 14-16, "*in a matrix of granular or powder particles of an active material*"; b) on page 4 at lines 4-8, the specification discloses "*a means for applying pressure to the external surface of the assembled cell, ensuring close contact between granular or powder particles and between the particles and the electrode*" and at lines 23-24 the specification discloses "*the powder or grains of the active material*"; c) on page 5, lines 9-14, the specification establishes that "*The configuration may be one in which each carbon fiber constitutes an electrode*"; d) page 9, lines 8-10 discloses "*Electrode housing 6 has a flat piece of conductive fabric 1 inserted into electrical insulation bag 5 filled with a zinc, lead, or silver oxide slurry 2 on both sides*", and at lines 19-23 the specification discloses "*to prevent agglomeration of the slurry powder into a single piece*"; e) page 10, lines 4-9 mentions that "*the electrode pair or set of electrode pairs may be held under pressure by spring elements 8*"; f) at page 12, lines 5-9, the specification recites "*a slurry electrode accumulator*". (***Emphasis provided→***) Additionally, original claim 25 specifically recited "*said electrode executed by sintering, pressing or other method*". Nowhere the specification as filed mentions, discloses, or suggests the limitation "*non-glued and non-sintered compressed particles*" as now presented by applicant. In other words, the specification as filed neither supports the limitation "*non-glued*", nor "*non-sintered*" nor "*compressed*". In contrast, the specification as filed in original claim 25 provides guidance to support "*a sintered electrode material*" which is just opposite to "*non-*

sintered"; and only "*a pressed electrode material*" but not a "*compressed electrode material*" as applicant vehemently argues. The difference between "compress" and "press" (as defined in Merriam-Webster's Collegiate Dictionary 10th Edition) is that the former may encompass "*reduction in size or volume as if by squeezing*" while the latter simply requires "*to act upon through steady pushing or thrusting force exerted in contact*" (simply to apply a force without necessarily forming a compact/compressed body).

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claim 28 and 41 are rejected under 35 U.S.C. 102(b) as being anticipated by Honda et al 5580676.

As to claim 28 and 41:

Honda et al disclose a rectangular battery including a plurality of cathode plates and anode plates alternately superposed via a separator to face each other. **Figure 6** illustrates battery casing 2 and electrode group 1 formed by packing each of plural cathode plates 3 with a separator 4; and anode plate 5.

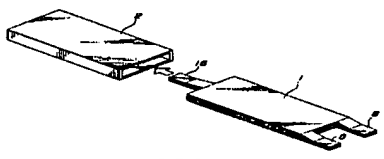


FIG.6

Figure 20 also illustrates the specific embodiment wherein cathode plates 3 and anode plates 5 both having one side coated are packed with separators 4 (COL 5, lines 6-15). *That is, the separator is in the form of a two-layered structured wrapping/enveloping cathode plate 3 and anode plate 5.*

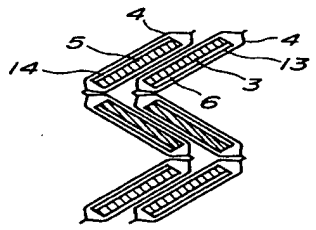


FIG.20

In this case, separator 4 is a doubled-folded separator as shown in Figures 16 (COL 4, lines 60-65). A pair of separators (two layers) in Figure 10 is also shown (COL 4, lines 12-15). *That is, the separator is in the form of a two-layered structured wrapping/enveloping cathode plate 3.*

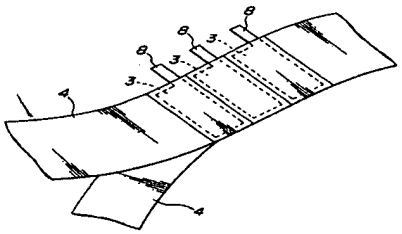


FIG.10

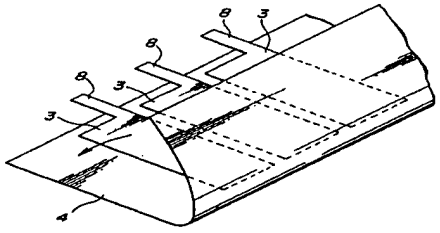


FIG.16

Honda et al further disclose that cathode plate 3 is formed by coating one or both sides of a plane, substantially rectangular sheet-like aluminum foil 6 with a mixed cathode agent 7 and

then drying and pressing the resulting product wherein the mixed cathode agent is a mixture of a Li-based powder as an active cathode agent (COL 3, line 63-COL 4, lines 3). The anode plate is formed by coating one or both sides of a plane, substantially rectangular sheet-like Cu foil 14 with a mixed cathode agent 15 and then drying and pressing the resulting product wherein the mixed cathode agent is a mixture of a carbon powder as an anode cathode agent (COL 4, line 48-55). Honda et al further disclose that separator 4 allow passing of ions (COL 4, lines 7-10). The liquid electrolyte is also disclosed (COL 3, lines 51-53).

Examiner's Note: *during charging/discharging electrode structures (the electrode active materials) inherently suffers changes in volume (expansion and contraction) due to the nature of the chemical reaction taking place, given that battery casing 2 contains inserted therein electrode group 1 as depicted below in* ***Figure 6****, the examiner contends that the battery casing exerts sufficient pressure to counteract such changes to electrode's volume which results from the electrochemical reaction. In this regard, in the absence of a specific description of "an elastic means applying pressure" and its specific degree of elasticity, the examiner further contends that the battery casing 2 of Honda et al provides the necessary structural and functional interrelationship (elasticity) to apply pressure to the electrode group 1. In this case, applicant is only claiming that "said housing acting as an elastic means applying pressure"*

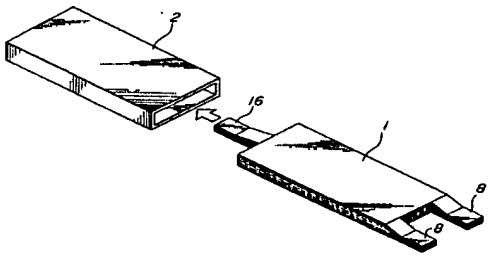


FIG.6

Thus, the present claims are anticipated.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 28 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Honda et al 5580676 in view of Tsutsue et al 2002/0006548.

As to claim 28:

Honda et al disclose a rectangular battery including a plurality of cathode plates and anode plates alternately superposed via a separator to face each other. **Figure 6** illustrates battery casing 2 and electrode group 1 formed by packing each of plural cathode plates 3 with a separator 4; and anode plate 5.

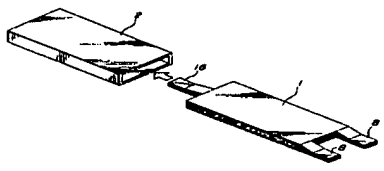


FIG.6

Figure 20 also illustrates the specific embodiment wherein cathode plates 3 and anode plates 5 both having one side coated are packed with separators 4 (COL 5, lines 6-15). *That is, the separator is in the form of a two-layered structured wrapping/enveloping cathode plate 3 and anode plate 5.*

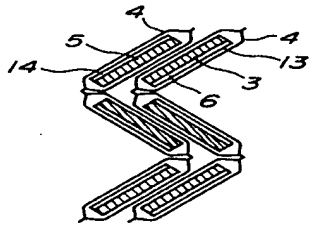


FIG.20

In this case, separator 4 is a doubled-folded separator as shown in Figures 16 (COL 4, lines 60-65). A pair of separators (two layers) in Figure 10 is also shown (COL 4, lines 12-15). *That is, the separator is in the form of a two-layered structured wrapping/enveloping cathode plate 3.*

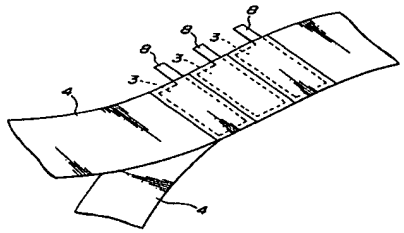


FIG.10

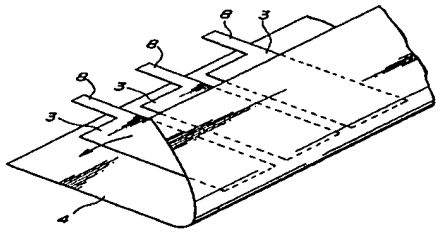


FIG.16

Honda et al further disclose that cathode plate 3 is formed by coating one or both sides of a plane, substantially rectangular sheet-like aluminum foil 6 with a mixed cathode agent 7 and

then drying and pressing the resulting product wherein the mixed cathode agent is a mixture of a Li-based powder as an active cathode agent (COL 3, line 63-COL 4, lines 3). The anode plate is formed by coating one or both sides of a plane, substantially rectangular sheet-like Cu foil 14 with a mixed cathode agent 15 and then drying and pressing the resulting product wherein the mixed cathode agent is a mixture of a carbon powder as an anode cathode agent (COL 4, line 48-55). Honda et al further disclose that separator 4 allow passing of ions (COL 4, lines 7-10). The liquid electrolyte is also disclosed (COL 3, lines 51-53).

Examiner's Note: *during charging/discharging electrode structures (the electrode active materials) inherently suffers changes in volume (expansion and contraction) due to the nature of the chemical reaction taking place.*

Honda et al disclose a battery as described and seen above. However, Honda et al does not expressly disclose the specific elastic housing (*this is assuming arguendo that applicant is of the opinion that the battery casing of Honda et al is incapable of being elastic, a point not conceded by the examiner, See rejection under Section 102 above*).

Tsutsue et al disclose a unitary laminated battery sheet (ABSTRACT) using a unitary bound sheet-like structure of an electrode (P0006) to obtain a thin rechargeable battery housed in a jacket case of a thin and flexible laminate sheet (P0006). Of particular interest is that Tsutsue et al also includes positive and negative electrode films or sheets each of which comprises a porous current collector (substrate) and a layer of active material mixture (P0015) wherein LiCoO2 is used as the positive active material (P0050).

In view of the above, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the specific elastic housing (flexible jacket sheet) of

Tsutsue et al in the battery of Honda et al as Tsutsue et al disclose the suitability of employing such specific flexible housing in battery having a sheet-like structure for specifically housing electrochemically active material necessary for power generation. As such, Tsutsue et al provides specific guidance for using flexible (elastic) housing for sheet-like batteries. Therefore, the teachings of Tsutsue et al are entirely pertinent to Honda et al because they both also address the same problem of providing suitable container/casing/housing for battery having substantially similar structures and employing substantially similar electrochemical active materials.

10. Claims 29 and 35-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over: a) Honda et al 5580676; and/or b) Honda et al 5580676 in view of Tsutsue et al 2002/0006548 as applied to claim 28 above, and further in view of Devitt et al 3669746.

Honda et al and/or Honda et al-Tsutsue et al are applied, argued and incorporated herein for the reasons above. Nevertheless, Honda et al do not expressly disclose the specific substrate material, wound electrode and the woven separator.

As to claims 29 and 37:

Devitt et al disclose a secondary alkaline battery having a zinc-containing electrode (TITLE/ COL 1, lines 35-40) including silver/zinc alkaline cells (COL 1, lines 42-47). Devitt et al discuss the importance of applying a certain pressure to the stack of electrodes through the separator layers (COL 2, lines 9-12), the intimate pressure engagement between the electrode and the separator (COL 2, lines 69 to COL 3, lines 3) and the pressure stacking of the electrodes (COL 4, lines 22-27).

In particular, Devitt et al disclose the use of flexible electrode plate capable of being spirally wound which may be a flat-grid structure such as woven wire screen or perforated sheet metal or expanded mesh (COL 4, lines 19-23 and lines 29-35).

As to claim 35:

Devitt et al illustrate spirally wound battery cell (FIGURE 1-2/ COL 40-42/ COL 4, lines 20-22)

As to claim 36:

Devitt et al disclose the use of woven fabric separators such as cellophane (COL 1, lines 70-73/ COL 5, lines 69-72)

In view of the above, it would have been obvious to one skilled in the art at the time the invention was made to use the specific substrate material of Devitt et al in the rechargeable battery of Honda et al as Devitt et al disclose that such specific substrate material provides a long lasting base onto which the active material remains firmly in electrical contact, electrochemically active and reversible throughout the life of the battery.

With respect to the wound electrode, it would have been obvious to one skilled in the art at the time the invention was made to use the specific wound electrode of Devitt et al in the rechargeable battery of Honda et al and/or Honda et al-Tsutsue et al as Devitt et al disclose that the battery cell and the electrode per se are otherwise made to accept a desired configuration and to allow pressure stacking with relation to the rest of the cell contents as confined within the finished cell. Thus, the spirally (helically) wound arrangement of the battery cell and the electrode permits to better pressure stacking the cell.

With respect to the woven separator, it would have been obvious to one skilled in the art at the time the invention was made to use the specific woven separator of Devitt et al in the rechargeable battery of Honda et al and/or Honda et al-Tsutsue et al as Devitt et al disclose that the woven separator is a homogeneous and uniform structure having highly absorbing and retentive of electrolyte and provides a uniformly wetted interface with the electrochemically active material.

11. Claims 29-30 is rejected under 35 U.S.C. 103(a) as being unpatentable over: a) Honda et al 5580676; and/or b) Honda et al 5580676 in view of Tsutsue et al 2002/0006548 as applied to claim 28 above, and further in view of Dews et al 3912538.

Honda et al and/or Honda et al-Tsutsue et al are applied, argued and incorporated herein for the reasons above. Nevertheless, the preceding prior art does not expressly disclose the specific fabric thickness.

Dews et al disclose a carbon fiber substrate for use as an electrode (ABSTRACT) wherein the carbon fiber has a fiber thickness of 6-8 microns (COL 2, lines 55-62). In particular, Dews et al discuss that the electrode is particularly adapted for use with alkaline cells (***emphasis added***) (COL 4, lines 2-7).

In view of the above, it would have been obvious to one skilled in the art at the time the invention was made to use the specific fabric thickness of Dews et al in the rechargeable battery of Honda et al and/or Honda et al-Tsutsue et al as Dews et al discloses that electrodes made from such fabric having the specific thickness have good chemical stability and electrical

conductivity, permits excellent control of the reaction interface of the electrode providing a relatively inexpensive electrode.

12. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over: a) Honda et al 5580676; and/or b) Honda et al 5580676 in view of Tsutsue et al 2002/0006548 as applied to claim 28 above, and further in view of Yardney 2812376.

Honda et al and/or Honda et al-Tsutsue et al are applied, argued and incorporated herein for the reasons above. Nevertheless, Honda et al does not expressly disclose the specific electrode materials.

Yardney also discloses the use of positive and negative electrodes consisting essentially of zinc oxide and silver, respectively (COL 3, lines 53-64).

With these teachings, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the specific electrode materials of Yardney in the battery of Honda et al and/or Honda et al-Tsutsue et al as Yardney disclose that such specific electrode materials provide a battery system capable of achieving suitable energy density and power capacity.

13. Claims 32-33 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over: a) Honda et al 5580676; and/or b) Honda et al 5580676 in view of Tsutsue et al 2002/0006548 as applied to claim 28 above, and further in view of Ruetschi 4192914.

Honda et al and/or Honda et al-Tsutsue et al are applied, argued and incorporated herein for the reasons above. Nevertheless, Honda et al does not expressly disclose the specific electrode thickness, particle size and carbon active material.

As to claims 32:

Ruetschi makes known an alkaline battery comprising Ag-Zn electrochemical system (COL 5, lines 44-46/ COL 1, lines 4-10) wherein the electrode is from 0.1 to 2 mm thick (COL 3, lines 20-25).

Regarding claim 33:

It is disclosed that the average grain size of the particulate is 2.6 to 3.4 micron (EXAMPLE 1/ COL 4, lines 35-40).

Regarding claim 46:

Ruetschi reveals that carbon black can be use as an active material additive (COL 3, lines 9-15).

In view of the above, it would have been obvious to one skilled in the art at the time the invention was made to use the specific electrode thickness of Ruetschi in the rechargeable battery of Honda et al and/or Honda et al-Tsutsue et al as Ruetschi discloses that such electrode thickness is suitable for providing an electrically conductive electrode structured adapted to the battery utilization.

With respect to the particle size, it would have been obvious to one skilled in the art at the time the invention was made to use the specific particle size of Ruetschi in the rechargeable battery of Honda et al and/or Honda et al-Tsutsue et al as Ruetschi discloses that such specific

particle size of the electrochemical active material provides improved charge/discharge characteristics.

With respect to the carbon active material, it would have been obvious to one skilled in the art at the time the invention was made to use the specific carbon active material of Ruetschi in the rechargeable battery of Honda et al and/or Honda et al-Tsutsue et al as Ruetschi discloses carbon material is used as an additive in the active material to impede the diffusion of the silver material.

14. Claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over: a) Honda et al 5580676; and/or b) Honda et al 5580676 in view of Tsutsue et al 2002/00065485580676 as applied to claim 28 above, and further in view of Ferrando 5045349.

Honda et al and/or Honda et al-Tsutsue et al are applied, argued and incorporated herein for the reasons above. Nevertheless, Honda et al does not expressly disclose the specific metal-coated graphite fiber substrate.

Ferrando teaches an alkaline secondary battery (TITLE) comprising a silver-nickel particle coated graphite fiber (ABSTRACT/ COL 1, lines 52-55/ COL 1, lines 65-68).

In view of the above, it would have been obvious to one skilled in the art at the time the invention was made to sue the specific metal coated graphite fiber substrate of Ferrando in the battery of Honda et al and/or Honda et al-Tsutsue et al as Ferrando disclose that such specific coating provides an electrode which operates at near silver voltages while being lighter weight and using less costly materials.

15. Claims 38-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over: a) Honda et al 5580676; and/or b) Honda et al 5580676 in view of Tsutsue et al 2002/0006548 5580676 as applied to claim 28 above, and further in view of Ferrando 5283138.

Honda et al and/or Honda et al-Tsutsue et al are applied, argued and incorporated herein for the reasons above. Nevertheless, Honda et al does not expressly disclose the specific metal-coated graphite fiber substrate.

Ferrando'138 teaches an alkaline secondary battery (COL 5, lines 4-6) comprising a metal-coated graphite fiber of the current collector/support grid (ABSTRACT/ COL 2, lines 44-50/ COL 2, line 67 to COL 3, lines 2). It is disclosed that the copper coated thin layer has a thickness of 10 micron (COL 3, lines 43-49).

In view of the above, it would have been obvious to one skilled in the art at the time the invention was made to sue the specific metal coated graphite fiber substrate of Ferrando'138 in the battery of Honda et al and/or Honda et al-Tsutsue et al as Ferrando'138 disclose that such specific coating provides a light weight electrode with enhanced characteristics for supporting active material and providing electrical conductivity.

16. Claim 40 is rejected under 35 U.S.C. 103(a) as being unpatentable over: a) Honda et al 5580676 in view of Ferrando 5045349; and/or b) Honda et al 5580676 in view of Tsutsue et al 2002/0006548 in view of Ferrando 5045349 as applied to claim 38 above, and further in view of Mansfield Jr et al 5306580.

Honda et al-Ferrando'349 and/or Honda et al-Tsutsue et al-Ferrando'349 are applied, argued and incorporated herein for the reasons above. Nevertheless, the preceding prior art does not expressly disclose the specific metal coating material.

Mansfield Jr et al disclose an electrochemical cell (TITLE) wherein the alkaline battery uses a zinc anode and a silver-based cathode (COL 1, lines 31-45) and wherein an electrically conductive substrate is coated by with a metal selected from at least indium and lead and said coated substrate contacts the electrode material (COL 2, lines 53-62/ CLAIM 1). Mansfield Jr et al is directed to alkaline cells with a Zinc-containing electrode (COL 2, lines 42-48).

In view of the above, it would have been obvious to one skilled in the art at the time the invention was made to use the specific metal coating material of Mansfield Jr et al in the battery of both Honda et al-Ferrando'349 and/or Honda et al-Tsutsue et al-Ferrando'349 as Mansfield Jr et al teach that such specific coating material are capable of reducing gas generation at the interior surface of the anode cup without interfering with the chemical reactions that enable the cell to produce an electrical current.

17. Claims 42-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over: a) Honda et al 5580676; and/or b) Honda et al 5580676 in view of Tsutsue et al 2002/0006548 in view of the WO 98/38686 document (*Note: US patent 6207316 to Pauling belongs to the same patent family of the WO'686 document, thus, for purposes of rejection and paragraph citation the examiner has used the US patent'316. The WO 98/38686 has been officially cited hereinabove as it has an earlier effective publication date for 102(b) statutory purposes*).

Honda et al and/or Honda et al-Tsutsue et al are applied, argued and incorporated herein for the reasons above. Nevertheless, the preceding prior art does not expressly disclose the specific separator material.

Regarding claims 42-44:

Pauling discloses the separator material can be made from polyethylene and polypropylene (COL 27-33). *It is noted Pauling uses the same separator material as instantly claimed, thus, the separator material must exhibit the specific swelling and impermeability properties.*

Regarding claim 45:

Pauling teaches the separator prevent dendrite formation during recharging (COL 6, lines 27-35/ CLAIM 8).

In view of the above, it would have been obvious to one skilled in the art at the time the invention was made to use the specific separator material of Pauling in the battery of Honda et al and/or Honda et al-Tsutsue et al as Pauling teaches that separator made of such claimed materials provide satisfactory structural integrity and mechanical stability while still maintaining the degree of ion impermeability required in a battery. Additionally, the specific separator material prevent dendrite formation during recharging.

Response to Arguments

18. Applicant's arguments with respect to claims 28-46 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Raymond Alejandro whose telephone number is (571) 272-1282. The examiner can normally be reached on Monday-Thursday (8:00 am - 6:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Raymond Alejandro
Primary Examiner
Art Unit 1745

RAYMOND ALEJANDRO
PRIMARY EXAMINER